CLAIMS

What is claimed is:

1. A tool for measuring parameters, comprising:

a plate having a surface and a plurality of edges;

at least one fixed measurement structure integrated with an edge of the plurality of edges of the plate, the at least one fixed measurement structure including:

a recessed portion; and

at least one projection extending upward within the recessed portion forming at least one fixed variation measurement structure.

2. The tool according to claim 1, wherein the at least one fixed variation measurement structure is provided between a sidewall of the projection and an opposing sidewall formed from the recessed portion.

3. The tool according to claim 1, wherein the at least one fixed variation measurement structure includes a first measurement indicia measuring a distance from an edge of the recessed portion to a farthest edge of the at least one projection.

4. The tool according to claim 1, wherein the at least one projection is offset from center within the recessed portion.

5. The tool according to claim 4, wherein the at least one fixed variation measurement structure includes two measurement indicia, a first of the two measurement indicia measuring a distance from a first edge of the recessed portion to a farthest edge from the first edge of the at least one projection and a second of the two measurement indicia measuring a distance from a second

edge of the recessed portion to a farthest edge from the second edge of the at least one projection.

6. The tool according to claim 1, further comprising a downslope measuring distance structure.

7. The tool according to claim 6, wherein the downslope measuring distance structure includes a measurement indicia from an edge of the recessed portion to a portion on the plate.

8. The tool according to claim 1, wherein the at least one projection is positioned at least at one sidewall of the recessed portion.

9. The tool according to claim 8, wherein the at least one projection forming the at least one variation measurement structure is two projections, each positioned at sidewalls of the recessed portion.

10. The tool according to claim 8, wherein the at least one projection forms a stepped portion at the one sidewall.

11. The tool according to claim 8, wherein the at least one projection provides a narrow recess closer to a bottom portion of the recessed portion with respect to a portion above the at least one projection within the recessed portion.

12. The claim according to claim 8, wherein the at least one projection and recessed portion measures maximum and minimum allowable material thickness of a specific thickness of the material.

13. The tool according to claim 1, wherein the at least one projection is at least two projections spaced apart from one another within the recessed

portion, wherein one of the two projections is formed at the sidewall of the recessed portion and the at least two projections form two variation measurement structures.

14. The tool according to claim 1, wherein the at least one projection is four projections, wherein the four projections provide weld bead variation measurements for all wall thicknesses and form at least two variation measurement structures.

15. The tool according to claim 14, wherein:

a first projection of the four projections is positioned at a first sidewall of the recessed portion;

a second projection of the four projections is positioned at an opposing sidewall of the recessed portion; and

a third projection and a fourth projection are spaced apart from one another within the recessed portion and from the first projection and the second projection.

16. The tool according to claim 15, wherein:

a distance measured between inner sidewalls of the third projection and the fourth projection represent a minimum weld bead dimension and a distance measured between outer sidewalls of the third projection and the fourth projection represent a maximum weld bead variation dimension for the minimum weld bead dimension, and

a distance measured between sidewalls of the recessed portion represent a maximum weld bead dimension and a distance measured between exposed sidewalls of the first projection and the second projection represent a maximum weld bead variation dimension for the maximum weld bead dimension.

17. The tool according to claim 16, wherein:

a space represented between the first minimum weld bead dimension and the maximum weld bead variation dimension is an allowable variation for a weld bead associated with the minimum weld bead dimension; and

a space represented between the maximum weld bead dimension and the maximum weld bead variation dimension is an allowable variation for a weld bead associated with the maximum weld bead dimension.

18. The tool according to claim 1, wherein the at least one projection is six projections, wherein the six projections form a stepped configuration at each sidewall of the recess and provide weld bead variation measurements for all wall thicknesses.

19. The tool according to claim 1, wherein the recessed portion is a stepped configuration forming at least two stepped portions.

20. The tool according to claim 1, wherein the recessed portion is a stepped configuration forming a portion lower than remaining portions of the recessed portion.

21. The tool according to claim 1, wherein the at least one fixed measurement structure measures at least one of weld bead overlap, weld downslope, allowable maximum and minimum weld bead variation, allowable material thickness variation, convexity and concavity.

22. A method for measuring a maximum and minimum allowable material thickness using a tool having a recessed portion with a stepped configuration, the method comprising the steps of:

placing a first portion of the recessed portion over a thickness of the material;

navigating the first portion over portions of the material;

determining whether the first portion slips over the thickness of the material and, if so, then the material thickness is within allowable thickness variation; and

determining whether the material enters a second, narrower portion of the recessed portion and, if not, then the material thickness is within allowable thickness variation.

23. A method of measuring bead overlap, comprising the steps of:

measuring a bead width at a certain location by placing a structure with edges near the bead;

rotating the structure approximately 90 degrees;

placing the structure lengthwise across the bead;

aligning one of the edges of the structure with an outside edge of a weld bead at about the certain location; and

count an amount of bead overlaps between the edges of the structure.

24. The method of claim 23, comprising the step of centering the structure over the bead when placing the structure lengthwise. .